

WHAT IS CLAIMED IS:

1. A method for forming an optical waveguide from an optical fiber having a longitudinal axis, said method comprising:

exposing a first region of said optical fiber to thermal energy, with a portion of said thermal energy being transferred to said optical fiber, defining transferred energy;

dissipating said transferred energy at a second region of said optical fiber, with said first and second regions being spaced-apart, with thermal energy passing between said first and second spaced-apart regions forming a flow; and

maintaining, in said flow, a constant rate of thermal transfer between said first and second spaced-apart regions, thereby providing a graded index of refraction in a portion of said optical fiber located between said first and second spaced-apart regions.

2. The method as recited in claim 1 wherein dissipating further includes removing said transferred energy from said optical fiber in a direction that extends radially with respect to said longitudinal axis.

3. The method as recited in claim 1 wherein dissipating further includes transferring said transferred energy away from said optical fiber radially symmetrically about said longitudinal axis.

4. The method as recited in claim 1 wherein said index of refraction changes approximately 4% between said first and second spaced-apart regions.

5. The method as recited in claim 1 wherein maintaining further includes avoiding variances in said thermal energy being transferred to said optical fiber proximate to said first region and avoiding variances in a rate of dissipation of said transferred thermal energy.

6. The method as recited in claim 1 further including segmenting said optical fiber proximate to said first region.

7. The method as recited in claim 6 wherein segmenting said optical fiber further includes forming a lens proximate to said first region, with said portion extending from said second region, toward said first region, terminating in a lens.

8. The method as recited in claim 1 wherein exposing said optical fiber further includes impinging a beam of infrared energy upon said optical fiber from a first direction and reflecting a subportion of said infrared energy to impinge upon said optical fiber from a second direction, with said second direction disposed opposite to said first direction.

9. The method as recited in claim 8 wherein a said subportion has a magnitude associated therewith, which is dependent upon a mode associated with said optical fiber.

10. A method for controlling optical properties of an optical fiber having a longitudinal axis, said method comprising:

creating a flow of thermal energy between two spaced-apart regions of said optical fiber, with a flux of said thermal energy in said flow being substantially constant to define a graded index of refraction in a portion of said optical fiber located between said two-spaced apart regions.

11. The method as recited in claim 10 wherein said creating further includes exposing said first region of said optical fiber to said thermal energy, with a portion of said thermal energy being transferred to said optical fiber, defining transferred energy and dissipating said transferred energy at a second region of said optical fiber.

12. The method as recited in claim 11 wherein dissipating further includes transferring said transferred energy radially symmetrically away from said optical fiber.

13. The method as recited in claim 12 wherein exposing said optical fiber further includes impinging a beam of infrared energy upon said optical fiber from a first direction and reflecting a subportion of said infrared energy to impinge upon said optical fiber from a second direction, with said second direction disposed opposite to said first direction.

14. The method as recited in claim 13 wherein said subportion has a magnitude associated therewith,

which is dependent upon a mode associated with said optical fiber.

15. The method as recited in claim 1 further including segmenting said optical fiber proximate to said first region to form a lens, with said portion extending from said second region, toward said first region, terminating in said lens.

16. An optical waveguide, comprising:  
an optical fiber having an interface region and an end region; and  
a lens integrally formed to said interface region, with said interface region being disposed between said end region and said lens, said end region and said lens each having a constant index of refraction and said interface region defining a graded index of refraction.

17. The optical waveguide as recited in claim 16 wherein said graded index of refraction has a maximum value at said lens and a minimum value at said end region.

18. The optical waveguide as recited in claim 17 wherein said graded index of refraction has a median value, with said maximum value being approximately 2% greater than said median value and said minimum value being approximately 2% less than said median value.

19. The optical waveguide as recited in claim 16 wherein said lens is a convex lens.